One segregated sample was taken at 2006.0 m RKB. The sampling time for the 2 3/4 gallon chamber was 62.3 minutes and for the 1 gallon chamber 34.8 minutes. The 2 3/4 gallon chamber contained 8 litres of oil and mud filtrate and 0.58 m^3 gas and the 1 gallon chamber contained 1.28 l oil and 0.122 m^3 gas.

RFT PRESSURES 34/10-34

RUN no.	Depth m MD RKB	Hyd. pres. kPa	Form. pres. kPa	Comment
4A	2000.5	33219	30948	Very good
4A	2009.0	33350	31008	Very good
4A	2021.5	33560	31123	Very good
4A	2051.5	34070	31420	Very good
4A	2062.5	34250	31543	Very good
4A	2086.5	34650	32142	Questionable
4A	2125.0	35290	32967	Very good
4A	2148.5	35650	33356	Very good
4A	2155.5	35700	33425	Very good
4A	2173.0	36060	33527	Very good
4A	2184.5	36260	33639	Very good
4A	2196.0	36440	33756	Very good
4A	2218.5	36800	33980	Very good
4A	2238.0	37090	34164	Very good
4A	2244.0	37190	34223	Very good
4A	2362.5	39060	35694	Very good
4A	2006.5	33302	30852	Very good

3.4 WELL TESTING

One drill stem test was performed in the Tarbert formation. The well produced 1545 sm^3/d oil with a density of 860 kg/m^3 at standard conditions and 135784 sm^3/d gas with a relative density of 0.682 g/cc through a 48/64" (19.05 mm) choke from the perforated interval: 1994 - 2001 m RKB.

4.10 Drilling Fluid Summary

The following is an extract from the mud reports.

Total amounts of bulk and chemicals and subsequent cost is subject to revision at a later date.

36 " HOLE

Details

30" casing at:	231 m
36" hole drilled from:	162 m
to:	235 m

Comments

Prior to drilling the 36" hole, 4 piles were set in holes drilled out with seawater and high viscosity pills.

The 36" hole was drilled from 162 meters to 235 meters using seawater and high viscosity gel pills. When reaching TD at 235 meters, a 15 m^3 gel pill was pumped and displaced with seawater. 50 m^3 high viscosity gel mud was then pumped, and a wiper trip was made. After the wiper trip, the hole was circulated with seawater while waiting on weather. A 10 m^3 gel pill was pumped and the hole was circulated with seawater. Before running the 30"casing, the hole was displaced with 40m^3 high viscosity gelmud and 60m^3 high viscosity CMC mud.

26 " HOLE

Details

20" casing at:	782 m
26" hole drilled from:	231 m
to:	795 m

Comments

A 9 7/8" pilot hole was drilled from 231 meters to 795 meters. Seawater and CMC pill were used to 315 meters where the hole was drilled with a 1.18 SG seawater/CMC fluid without returns due to the possibility of shallow gas. The mud was changed to seawater/CMC pills at 395 meters. The hole was drilled with seawater to 420 meter and with mud from 420 to 460 meter. The rest of the hole was drilled with seawater/CMC pills. 55 m^3 of 1,18 sg mud was pumped to displace the hole. After pulling out of the hole, traces of gas was detected, so the well was observed.

The 9 7/8" pilot hole was then opened up to 26" to 517 meters using seawater and unweighted high viscosity CMC pills. Due to storm we had to wait on the weather for 14 hours. The rest of the hole was drilled to TD where a 15 m^3 hivis pill was pumped and a wipertrip to the shoe was made. A new 15 m^3 pill was pumped, followed by seawater.
1,18 SG seawater/CMC fluid was displaced to the hole, prior to running 20" casing. This section was drilled with no returns and without any mud related problems.

The 20" casing was then run and cemented at 782 meters.

17 1/2 " HOLE

Details

13 3/8" casing at:	1675 m
17 1/2" hole drilled from:	782 m
to:	1690 m

Comments

310 m^3 1,30 SG Gyp/PAC mud was mixed before drilling out the 20" shoe. The shoe was drilled out using seawater and the hole was then displaced to 1,30 SG mud. A FIT was performed at 792 m. The hole was then drilled to 1183 m where a bit trip was performed. At 1500 m the mudweight was increased to 1,45 SG. The hole was then drilled to 1690 m(TD) with 1,45 SG mud. After logging a wiper trip was performed partly due to that the logging tool was unable to pass 1670 m.

When running 13 3/8" casing, the casing became differentially stuck when the shoe was at 1476 m.
A stuck pipe pill was mixed and spotted in hole, and the csg was worked free.

Mud and premix was mixed with the concentrations specified in the program, this produced good results. The fluid remained stable throughout the section. A minor increase in viscosity occured in the very last part of the section due to increasing MBT-values combined with a higher mudweight. A higher dilution rate kept viscosity and MBT-values down. Cuttings on the upper screens of the shaker were well incapsulated and separated whereas soft clay on the lower sceens had to be"helped off" the shakers with high pressure hoses. At the end of the section cuttings became more sticky.

SUMMARY OF EVENTS

The shakers performed satisfactorily with very small mudlosses using 52 MESH sceens. The mudcleaner was run at all times during drilling, most of the time the underflow was dumped. The centrifuge was run periodically when drilling with 1,30 SG mud in order to reduce drillsolids content and to control mudweight. When running the 13 3/8" casing , it became differentially stuck when the shoe was at 1476 meters. A 38 m^3 stuck pipe pill was mixed to Statoils specifications using Pipe Lax, Anco Freepipe W and Imco Spot. This was then weighted up to 1,44+ SG and spotted in the annulus. After waiting for approximately 30 hours , the casing was freed. The mudweight was then reduced to 1,40 SG using premix and centrifuge, the pill circulated out, and the casing set and cemented at 1675 meters without any further problems.

12 1/4 " HOLE

Details

9 5/8" casing at:	1982	m
12 1/4" hole drilled from:	1675	m
to:	1994	m

Comments

Old 1,40 SG Gyp/Pac fluid from the previous section was used to drill the cement, shoe and clean out the rathole. Prior to performing the FIT, the hole was displaced to new 1,55 SG Gyp/Pac fluid, and 150 m^3 old fluid was dumped through the sandtrap. This was done partially due to cement contamination, but also to prevent clay related problems from the high fluid density expected in this section. The fluids clay content at the end of the 17 1/2" section was 46 kg/m3. This would have been very expensive to "cure" by dilution and would also have caused viscosity problems when increasing fluid density.

The 12 1/4" hole was drilled to 1994 meters with an ROP of about 50 m/hr. Fluid density was 1,55 SG to 1760 meters where the density was increased to 1,65 SG, at 1975 meters the fluid density was increased to 1,66 SG. Mud properties stayed within specifications throughout the entire section with only small additions of premix. When reaching TD for the section at 1994 meters, the hole was backreamed to the shoe. When circulating after running back to bottom, some gumbo was evident at the shakers. This was circulated out and both the hole and the mud was in good shape after this. The caliper log confirmed that the hole was in good condition without any major washouts or swelling of formation.

Shakers were run with 10 mesh screens on top and 84 and 105 mesh screens on bottom. No major mud losses were experienced at the shakers. As usual, fine cuttings had to be scraped and hosed off the lower screens. The mudcleaner was run with 200 mesh screens.

SUMMARY OF EVENTS

After the completion of logging, the 9 5/8" casing was set at 1982 meters with no problems. However; all returns were lost when attempting to circulate the casing volume. Due to this, the cement had to be displaced using the Bentonite/Lignite fluid mixed for the 8 1/2" section.

8 1/2 " HOLE

Details

7" liner at:	1822 - 2405 m
8 1/2" hole drilled from:	1982 m
to:	2410 m

Comments

The cement for the 9 5/8" casing was displaced without returns using the Bentonite/Lignite fluid for the 8 1/2" section. This was pretreated with Sodium bicarbonate to reduce cement contamination. When running in hole, the cement was tagged at 1723 meters, 250 meters higher than expected. Drilling of cement commenced with high mudlosses on shakers caused by viscosity increase from high pH values and high calcium content. This was soon brought under control by treating the fluid with premixed Spercell FE, Lignite and Anco Resin as well as by adding Sodium bicarbonate directly to the active system.

A Formation Integrity Test was performed at 1995 m. When starting to pull out, a gas kick was experienced. The mud was then weighted up to 1.66 SG and the gas circulated out. From this point coring was started and continued to 2281m. A total of 11 cores were cut. The hole was then reamed with 8 1/2" bit and logged with MWD-tool while the mud was treated with Gypsum/Bicarbonate in ratio 8/10 which reduced PH from 11,7 to 10,6. After that the hole was drilled from 2281 m to 2410 m without problems.

SUMMARY OF EVENTS

The mud was treated with about 3 kg/m^3 of Anco-temp before starting a two day long logging program. The caliper log showed an in gauge hole and the logging program was completed after 2 days without problems. At the wiper trip the mud from btms-up was still thin and in good shape. The 7" liner was run and cemented in place without problems. The liner was filled with 1,90 SG mud during displacement of the cmt. After pulling out 10 stands and circulating, about 5m^3 of the spacer were recovered and dumped.

When returning in hole with 81/2" bit, the CMT was tagged at 1694 m and drilled to top of liner at 1822 m.A further run with 6" bit and scrapers cleaned out the liner. The mud was treated with a combination of gypsum and bicarbonate to lower pH as far down as 10.6 . The 10min GEL was high and therefore new mud was mixed to place in the hole before the start of testing.

When circulating after testing, the mud showed no adverse rheological effects from being left in the hole over a long period of time. However, the gas readings were a bit high, and gas free mud from the reserve pits was pumped to the hole to eliminate possible gas entrapment. The hole was then plugged and temporarely abandoned. All mud left was dumped.

CASING INTERVAL

Well:	34/10-34	**Operator:**	Statoil	
Casing:	30"	**From/to:**	162,0 m	231,0 m
Bit:	36"	**From/to:**	162,0 m	235,0 m

Quantity:	Material:	Units:	Unit Price:	Total Cost NOK:
28	Wyoming Bentonite	mt	1 716,00	48 048,00
21	Barite	mt	645,00	13 545,00
75	Caustic	kg	3,69	276,75
90	Lime	kg	1,56	140,40
150	Soda Ash	kg	2,31	346,50
1700	CMC EHV	kg	14,56	24 752,00
	VOLUME m3			476,00

Total Cost for Interval:	87 108,65
Cost per meter	1 193,27
Cost per m3:	183,00

Drilling days: 10
(Included piling)

CASING INTERVAL

Well:	34/10-34	**Operator:**	Statoil		
Casing:	20"	**From/to:**	162,0 m	782,0 m	
Bit:	26"	**From/to:**	231,0 m	795,0 m	

Quantity:	Material:		Units:	Unit Price:	Total Cost NOK:
6425	CMC EHV		kg	14,56	93 548,00
221	Barite		mt	645,00	142 545,00
300	Celpol Reg		kg	32,28	9 684,00
	VOLUME	m3			932,00

Total Cost for Interval:	245 777,00
Cost per meter	435,77
Cost per m3:	263,71

Drilling days: 6

CASING INTERVAL

Well:	34/10-34	**Operator:**	Statoil	
Casing:	13 3/8"	**From/to:**	162,0 m	1675,0 m
Bit:	17 1/2"	**From/to:**	782,0 m	1690,0 m

Quantity:	Material:	Units:	Unit Price:	Total Cost NOK:
335	Barite	mt	645,00	216 075,00
375	Ancocide	ltr	16,22	6 082,50
7175	Gypsum	kg	1,62	11 623,50
725	Celpol Reg	kg	32,28	23 403,00
11525	Celpol SL	kg	32,28	372 027,00
125	Lime	kg	1,56	195,00
1600	AncoFreepipeW	ltr	29,25	46 800,00
800	Pipelax	kg	29,18	23 344,00
4994	Imcospot	kg	35,44	176 987,36
340	Ironite Sponge	kg	24,77	8 421,80
	VOLUME m3			864,00

Total Cost for Interval:	884 959,16
Cost per meter	974,62
Drilling days: 11	Cost per m3: 1 024,26

CASING INTERVAL

Well:	34/10-34	**Operator:**	Statoil	
Casing:	9 5/8"	**From/to:**	162,0 m	1982,0 m
Bit:	12 1/4"	**From/to:**	1675,0 m	1994,0 m

Quantity:	Material:	Units:	Unit Price:	Total Cost NOK:
317	Barite	mt	645,00	204 465,00
3350	Celpol SL	kg	32,28	108 138,00
150	Celpol Reg	kg	32,28	4 842,00
1400	Gypsum	kg	1,62	2 268,00
30	Lime	kg	1,56	46,80
225	Bicarbonate	kg	3,31	744,75
25	Ancocide	kg	16,22	405,50
	VOLUME m3			216,00

Total Cost for Interval:	320 910,05
Cost per meter	1 005,99
Cost per m3:	1 485,69

Drilling days: 4

CASING INTERVAL

Well:	34/10-34	**Operator:**	Statoil	
Casing:	7 " Liner	**From/to:**	1822,0 m	2405,0 m
Bit:	8 1/2"	**From/to:**	1982,0 m	2410,0 m

Quantity:	Material:	Units:	Unit Price:	Total Cost NOK:
26	Bentonite	ton	1 716,00	44 616,00
4925	Lignite	kg	3,89	19 158,25
502	Barite	ton	645,00	323 790,00
695	Desco CF	kg	19,68	13 677,60
1352	Anco Temp	kg	90,37	122 180,24
5325	Anco Resin	kg	12,46	66 349,50
450	Soda Ash	kg	2,31	1 039,50
200	Defoamer	ltr	15,55	3 110,00
235	Lime	kg	1,56	366,60
4775	Bicarbonate	kg	3,31	15 805,25
150	Celpol Reg	kg	32,28	4 842,00
600	Celpol LV	kg	32,28	19 368,00
1675	Spercell FE	kg	3,77	6 314,75
1425	Gypsum	kg	1,62	2 308,50
	VOLUME	m3		539,00
		Total Cost for Interval:		642 926,19
		Cost per meter		1 502,16
Drilling days: 27 (Incl. test and P & A)		Cost per m3:		1 192,81

TOTAL MATERIALS

Well: 34/10-34 **Operator:** Statoil
From/to: 162,0 m 2410,0 m

Quantity:	Material:	Units:	Unit Price:	Total Cost NOK:
1396	Barite	mt	645,00	900 420,00
54	Bentonite	mt	1 716,00	92 664,00
600	Soda Ash	kg	2,31	1 386,00
15475	Celpol LV	kg	32,28	499 533,00
1325	Celpol Reg	kg	32,28	42 771,00
75	Caustic	kg	3,69	276,75
8125	CMC EHV	kg	14,56	118 300,00
480	Lime	kg	1,56	748,80
400	Ancocide	ltr	16,22	6 488,00
200	Defoamer	ltr	15,55	3 110,00
10000	Gypsum	kg	1,62	16 200,00
4925	Caust,Lignite	kg	3,89	19 158,25
1352	Ancotemp	kg	90,37	122 180,24
1675	Spercell FE	kg	3,77	6 314,75
5325	Anco Resin	kg	12,46	66 349,50
340	Ironite Sponge	kg	24,77	8 421,80
695	Desco CF	kg	19,68	13 677,60
5000	Bicarbonate	kg	3,31	16 550,00
1600	Anco Freepipe W	ltr	29,25	46 800,00
800	Pipelax	ltr	29,18	23 344,00
4994	Imcospot	kg	35,44	176 987,36
	VOLUME m3			3027
		Total Cost for Well:		2 181 681,05
		Cost per meter:		951,87
Drilling days: 58		Cost per m3:		720,74

V-672 .3

STATOIL

Rapport nr.	91.30
GEOLAB	
Kopi nr.	
Antall kopier	10

SEKTOR FOR PETROLEUMSTEKNOLOGI
Geologisk laboratorium

Gradering

Tittel
ORGANISK GEOKJEMISK KARAKTERISERING AV BRØNN 34/10-34

Oppdragsgiver	Prosjekt	
Knut Kirkemo, UND LS/NN		
Dato	**Antall sider**	**Antall vedlegg**
22 OKTOBER 1991	192	

Stikkord

organisk geokjemi, kildebergart, termisk modenhet, migrerte hydrokarboner, olje, gass

Sammendrag

Dette studiet har blitt utført ved Institutt for Kontinentalsokkelundersøkelser og Petroleumsteknologi (IKU), Trondheim, i samsvar med Statoils standard for organisk geokjemiske analyser.
Utvalg av prøver og kvalitetskontroll ble gjort av GEOLAB.

Utarbeidet av

IKU

Tekstoperatør

Godkjent av

4/11/91 Ger van Graas
Ger van Graas, Seksj.leder

4/11-91 Trygve Meyer
Trygve Meyer, Avd.leder

6.02.13

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RAPPORT

REG.NR.:	TILGJENGELIGHET:
91.130	Begrenset

RAPPORT TITTEL:

ORGANISK GEOKJEMISK KARAKTERISERING AV BRØNN 34/10-34

RAPPORT NR.: 22.2036.00/02/91

FORFATTER(E):

May Britt Myhr

DATO:	ANT. SIDER:	ANT. BILAG:	PROSJEKTLEDER:	SIGN.:
22 okt.-91	192	-	May Britt Myhr	May Britt Myhr
OPPDRAGSGIVER:			GODKJENT AV FAGLIG ANSVARLIG:	SIGN.:
Statoil, Geolab v/ Ger van Graas			Leslie Leith	Leslie Leith

STIKKORD:	KEY WORDS:
Organisk Geokjemi	Organic Geochemistry
34/10-34	34/10-34
Gullfaks	Gullfaks

Skipnes

1. INTRODUKSJON

Geokjemiske analyser og tolkning av prøver fra brønn 34/10-34 (IKU-prosjekt 22.2036.00) ble utført under kontraktnummer T211450 avrop 58.

Prøvene ble sendt fra Geco petroleum laboratorier, Stavanger og fra Statoil Geolab. Gassprøven fra DST1 ble sendt direkte fra Statoil til Institutt for Energiteknikk (IFE) som utførte gassanalysene. Oversikt over utførte analyser er gitt i tabell 1.1, 1.2 og 1.3.

Tabell 1.1 Analysetyper (sedimentprøver).

IKU nr.	Dybde	Prøve type	R-E	TOC	VR	Oppfølging
34/10-34						
G4157	810	CUT			x	
G4158	900	CUT			x	
G4159	1000	CUT			x	
G4160	1090	CUT			x	
G4161	1150	CUT			x	
G4162	1330	CUT			x	
G4163	1420	CUT			x	
G4164	1510	CUT			x	
G4165	1570	CUT	x	x		
G4166	1630	CUT	x	x		
G4167	1660	CUT			x	
G4170	1690	CUT	x	x		
G4171	1720	CUT			x	
G4172	1780	CUT			x	
G4173	1910	CUT			x	
G4174	1985.0	SWC	x	x		
G4175	1990.5	SWC	x	x		x
G4176	1992.0	SWC	x	x	x	x
G4189	1995.48	CORE	x			
G4190	1998.67	CORE	x			x
G4191	2003.52	CORE	x			
G4192	2009.30	CORE	x			x
G4193	2013.32	CORE	x			
G4194	2019.27	CORE	x			x
G4195	2029.37	CORE	x			
G4196	2038.50	CORE	x			x
G4197	2048.36	CORE	x			
G4198	2057.28	CORE	x	x	x	x
G4199	2057.49	CORE	x			
G4201	2070.28	CORE	x	x		
G4202	2080.24	CORE	x			x
G4203	2090.11	CORE	x			
G4204	2093.39	CORE	x	x		x
G4205	2094.35	CORE	x	x	x	
G4206	2099.78	CORE	x	x		
G4207	2105.36	CORE	x	x	x	
G4208	2107.93	CORE	x			

Tabell 1.1 fortsatt Analysetyper (sedimentprøver).

IKU nr.	Dybde	Prøve type	R-E	TOC	VR	Oppfølging
34/10-34						
G4209	2116.77	CORE	x			
G4210	2119.00	CORE	x	x		
G4211	2127.46	CORE	x			
G4212	2136.31	CORE	x			
G4213	2141.46	CORE	x	x		
G4214	2146.85	CORE	x			x
G4215	2148.86	CORE			x	
G4216	2153.36	CORE			x	
G4439	2157.26	CORE	x			
G4440	2160.79	CORE	x	x	x	x
G4441	2168.93	CORE	x			x
G4442	2177.30	CORE	x			
G4443	2186.27	CORE	x			
G4444	2195.16	CORE	x			x
G4445	2205.19	CORE	x			
G4446	2214.58	CORE	x			x
G4447	2224.33	CORE	x			
G4448	2234.33	CORE	x			
G4449	2245.10	CORE	x			
G4450	2254.04	CORE	x			
G4451	2261.30	CORE	x	x	x	
G4452	2267.60	CORE	x	x		x
G4453	2272.49	CORE	x	x		
G4177	2295.0	SWC	x	x	x	
G4178	2300	CUT	x	x		x
G4179	2312.5	SWC	x	x		
G4180	2325.0	SWC	x	x		
G4181	2332.5	SWC	x	x		
G4182	2348	CUT	x	x		
G4183	2350.0	SWC	x	x		
G4184	2356.0	SWC	x	x		x
G4185	2360	CUT	x			
G4186	2360.0	SWC	x			x
G4187	2363.0	SWC	x			
G4188	2399.5	SWC			x	

Tabell 1.2 Oppfølgingsanalyser (sedimentprøver).

IKU nr.	Dybde	Prøve type	Lito.	PY-GC S1	PY-GC S2	Vis. ker.	EOM/ MPLC	GC sat	GC aro	GC-MS sat	$^{13}C/^{12}C$ ker.	$^{13}C/^{12}C$ ekstr.
G4175	1990.5	SWC	Lst	x								
G4176	1992.0	SWC	Lst		x	x	x	x	x	x	x	x
G4190	1998.67	core	Sst				x	x	x	x		x
G4192	2009.3	SWC	SSt	x								
G4194	2019.27	core	SSt				x	x	x	x		x
G4196	2038.5	SWC	Sst	x								
G4198	2057.28	core	Kull		x	x	x	x	x	x	x	x
G4202	2080.24	core	Sst	x								
G4204	2093.39	core	Lst		x	x	x	x	x	x	x	x
G4214	2146.85	core	Sst	x								
G4440	2160.79	core	Kull		x	x	x	x	x	x	x	x
G4441	2168.93	core	Sst				x	x	x	x		x
G4444	2195.16	core	Sst	x								
G4446	2214.58	core	Sst				x	x	x	x		x
G4452	2267.60	core	Lst		x	x	x	x	x	x	x	x
G4178	2300	cut	Sltst		x	x	x	x	x	x	x	x
G4184	2356.0	SWC	Lst		x	x	x	x	x	x	x	x
G4186	2360.0	SWC	Sst				x	x	x	x		x

Tabell 1.3 Analyser av DST1.

Gass

- Komponentsammensetning
- $^{13}C/^{12}C$-isotopanalyse
- D/H-isotopanalyse

Olje

- Tetthet
- GC, hel olje
- Topping
- Separasjon
- GC, SAT-fraksjon
- GC, ARO-fraksjon
- GC-MS, SAT-fraksjon
- Isotopsammensetning (hel olje og fraksjoner)

1.1 Noen kommentarer til det analytiske

Vitrinittrefleksjon

Det var vanskelig å få pålitelige data fra de fleste prøvene på grunn av mangel på primært avsatte vitrinittfragmenter, høyt innhold av omarbeidet materiale eller på grunn av impregnering i prøvene fra Jura-bergartene. Hovedmengden av prøvene som ble undersøkt var rike på inertinitt og liptinitt, det siste hovedsaklig som matriseliptinitt. Rene vitrinittlag var sjeldne. Kullfragmentene var myke og vanskelige å polere.

GC av aromatiske hydrokarboner

Noen av ARO-kromatogrammene inneholdt noen topper i det høymolekylære området som hadde påfallende høy intensitet. GC-MS "full scan" analyse ble utført for å identifisere toppene. To av toppene viste seg å være ftalat- og silikonforbindelser, de andre ser ut til å være langkjedete alkoholer (?). Forurensningene er avmerket i kromatogrammene og de har ikke innvirket på de molekylære forholdene som ble beregnet.

Tabell 1 *Litologi og totalt organisk karbon-innhold. Brønn nr. 34/10-34.*

Prøve	Dybde (m)	TOC (Vekt % av tørr bergart)	Litologi	
G4157	810		60%	Karbonat, hvitt-gulgrått
			40%	Sandstein, hvit-lysegrå, glimmerrik, finkornet
			Annet	fra boreslammet - Gummi, Plast, Betong fra foring Skjellmateriale
G4158	900		50%	Karbonat, hvitt-gulgrått
			30%	Sandstein, grå-svart, glimmerrik, finkornet
			10%	Sand, hvit, klare kvarts-korn
			10%	Skjellmateriale
G4159	1000		100%	Siltstein, gul-brun med karbonatrikt materiale
G4160	1090		100%	Siltstein, gul-brun med karbonatrikt materiale
G4161	1150		100%	Siltstein, gul-brun med karbonatrikt materiale
			Annet	Små mengder leirstein, mørkegrå
G4162	1330		100%	Siltstein, grå-brun, noe karbonatrikt materiale
G4163	1420		90%	Leirstein, lys grå, karbonatrik
			10%	Siltstein, gul-brun
			Annet	Små mengder Pyritt, Betong, Sandstein, hvit, karbonatrik
G4164	1510		80%	Leirstein, lys grå, med glimmerrike lag
			20%	Leirstein, lys gul-brun, glimmerrike
				Små mengder Betong og Metall fra boring
G4165	1570	0.48	70%	Leirstein, grå-brun
			20%	Leirstein, middels-grå, glimmerrik
			10%	Karbonat, hvitt
G4166	1630	0.42	70%	Karbonat (Kalkstein), grå, med skjell-materiale
			20%	Leirstein, gul-brun
			10%	Sandstein, grå-hvit, finkornet, glimmerrik

- Den understrekede litologien ble plukket for videre analyse.

Tabell 1 *Litologi og totalt organisk karbon-innhold. Brønn nr. 34/10-34.*

Prøve	Dybde (m)	TOC (Vekt % av tørr bergart)	Litologi	
G4167	1660		40%	Sandstein, grå, finkornet
			40%	Leirstein, gul-brun med karbonatrikt materiale
			10%	Leirstein, middels grå, karbonatrik
			5%	Karbonat, grå med skjellmateriale
G4170	1690	0.48	70%	Leirstein, middels grå med karbonatrikt materiale
			30%	Sandstein, middels grå, finkornet
G4171	1720		90%	Leirstein, gul-grå med karbonatrikt materiale
			10%	Karbonat, grått med skjellmateriale
G4172	1780		95%	Leirstein, gul-grå med karbonatrikt materiale
			5%	Karbonat, grått med skjellmateriale
G4173	1910		80%	Sandstein, grå, finkornet, glimmerrik
			20%	Leirstein, gul-brun
G4174	1985.0 (swc)	1.29		Leirstein, lys-middels grå, karbonatrik
G4175	1990.5 (swc)	0.54		Leirstein, gul-brun med noe karbonatrikt materiale
G4176	1992.0 (swc)	3.04		Leirstein, mørkegrå, svakt karbonatholdig
G4189	1995.44-.48			Kvarts-sandstein, grå-brun, finkornet
G4190	1998.63-.67			Kvarts-sandstein, grå-brun, finkornet
G4191	2003.48-.52			Kvarts-sandstein, gul-brun, finkornet
G4192	2009.26-.30			Kvarts-sand, gul-brun, finkornet
G4193	2013.29-.32			Kvarts-sand, grå, glimmerrik, finkornet
G4194	2019.23-.27			Kvarts-sandstein, gul-brun, finkornet
G4195	2029.32-.37			Kvarts-sandstein, grå, finkornet, svakt karbonatholdig
G4196	2038.47-.50			Kvarts-sand, grå, finkornet
G4197	2048.31-.36			Kvarts-sand, grå-hvit, glimmerrik, finkornet

- Den understrekede litologien ble plukket for videre analyse.

Tabell 1 *Litologi og totalt organisk karbon-innhold. Brønn nr. 34/10-34.*

Prøve	Dybde (m)	TOC (Vekt % av tørr bergart)	Litologi
G4198	2057.24-.28	52.80	Kull
G4199	2057.46-.49		Kvarts-sandstein, lys grå-brun, glimmerrik, finkornet, noe karbonatrikt materiale
G4200	2067.30-.34		Kvarts-sandstein, lys grå, glimmerrik, finkornet
G4201	2070.24-.28	5.73	Leirstein, grå, glimmerrik, noe karbonatrikt materiale
G4202	2080.20-.24		Kvarts-sandstein, grå-brun, finkornet
G4203	2090.07-.11		Leirstein, grå-hvit, glimmerrik
G4204	2093.36-.39	4.00	Leirstein, middels grå, glimmerrik
G4205	2094.30-.35	58.20	Kull
G4206	2099.73-.78	21.20	Skifer, svart, karbonrik
G4207	2105.29-.36	27.50	Skifer, svart, karbonrik, "Seat-Earth"?
G4208	2107.88-.93		Kvarts-sandstein, lys grå-brun, glimmerrik, karbonatrik, finkornet
G4209	2116.73-.77		Kvarts-sandstein, grå-hvit, glimmerrik, karbonatrik, finkornet
G4210	2118.96-.00	16.50	Skifer, svart, karbonrik, "Seat-Earth"?
G4211	2127.41-.46		Leirstein, grå-hvit, glimmerrik
G4212	2136.26-.31		Leirstein, grå-hvit, glimmerrik
G4213	2141.42-.46	1.31	Leirstein, middels grå, glimmerrik, karbonatrik
G4214	2146.81-.85		Kvarts-sand, gul-brun, finkornet
G4215	2148.84-.86		Kvarts-sandstein, grå-hvit, glimmerrik, finkornet, plantemateriale
G4216	2153.34-.36		Kvarts-sandstein, grå-hvit, glimmerrik, finkornet, karbonatmateriale
G4439	2157.22-.26		Kvarts-sandstein, gul-grå, glimmerrik, finkornet
G4440	2160.75-.79	36.70	Kull, noe plantemateriale

Tabell 1 *Litologi og totalt organisk karbon-innhold. Brønn nr. 34/10-34.*

Prøve	Dybde (m)	TOC (Vekt % av tørr bergart)		Litologi
G4441	2168.89-.93			Kvarts-sandstein, gul-grå, glimmerrik, finkornet
G4442	2177.25-.30			Kvarts-sandstein, lys grå-brun, glimmerrik, noe karbonatmateriale
G4443	2186.21-.27			Kvarts-sandstein, grå-hvit, glimmerrik (olje "staining"), finkornet
G4444	2195.11-.16			Kvarts-sandstein, grå-hvit, glimmerrik, finkornet
G4445	2205.14-.19			Kvarts-sandstein, grå-hvit, glimmerrik, finkornet
G4446	2214.53-.58			Kvarts-sandstein, grå-hvit, glimmerrik, finkornet
G4447	2224.28-.33			Kvarts-sandstein, grå-hvit, glimmerrik, finkornet (olje "staining")
G4448	2234.29-.33			Kvarts-sandstein, grå-hvit, glimmerrik, finkornet
G4449	2245.05-.10			Kvarts-sandstein, grå-hvit, glimmerrik, finkornet
G4450	2253.97-2254.04			Siltstein, grå-hvit, glimmerrik, karbonatrik
G4451	2261.22-.30	1.65		Leirstein, middels grå, glimmerrik, oljelukt
G4452	2267.56-.60	1.55		Leirstein, mørk grå, glimmerrik, noe karbonatmateriale
G4453	2272.44-.49	2.36		Leirstein, mørk grå, glimmerrik
G4177	2295.00 (swc)	1.37		Leirstein, middels grå, karbonatrik
G4178	2300	2.09	90% 10% Annet	Siltstein, middels grå, glimmerrik Leirstein, gul-brun Plast, Gummi, Metall (små mengder, fra boring)
G4179	2312.5 (swc)	1.50		Leirstein, middels-mørkegrå, karbonatrik
G4180	2325.5(swc)	1.44		Siltstein, mørkegrå, kalkholdig

- Den understrekede litologien ble plukket for videre analyse.

Tabell 1 *Litologi og totalt organisk karbon-innhold. Brønn nr. 34/10-34.*

Prøve	Dybde (m)	TOC (Vekt % av tørr bergart)	Litologi	
G4181	2332.5(swc)	1.55		Leirstein, mørkegrå, glimmerrik
G4182	2348	1.56	90% 10% Annet	Leirstein, middels grå Kull Små mengder Leirstein, gul-brun, karbonatrik Boremateriale, Plast
G4183	2350.0 (swc)	1.24		Leirstein, mørkegrå, glimmerrik
G4184	2356.0 (swc)	1.35		Leirstein, mørkegrå, glimmerrik
G4185	2360		90% 10% Annet	Leirstein, middels-mørkegrå, glimmerrik Leirstein, rød-brun, karbonatrik Små mengder - Boremateriale - Plast, Metall
G4186	2360.0 (swc)			Sandstein, grå-hvit, svært finkornet, karbonatrik
G4187	2363.0 (swc)			Sandstein, lysegul-grå, svært finkornet, karbonatrik
G4188	2399.5			Siltstein, middels-mørkegrå, laminert, karbonatrik

- Den understrekede litologien ble plukket for videre analyse.

Tabell 2 Vitrinitt reflektivitets data.

IKU NR	LOKASJON	DYBDE (M)	VITRINITT REFLEKTIVITET	PÅL NIV	STANDARD AVVIK	FLUORE-SENS
G-4157	------	810	0.21 (8)	P	0.03	abs
G-4158	------	900	0.31 (12)	F	0.04	1,7
	------		0.70 (2)	R	0.12	
G-4159	------	1000	0.27 (23)	G	0.07	1-2,7
			1.00 (1)	R	0.00	
G-4160	------	1090	0.30 (17)	G	0.08	1-2,4
G-4161	------	1150	0.22 (2)	P	0.04	1-2
			1.12 (1)	R	0.00	
G-4162	------	1330	N.D.P.	-	----	2,4
G-4163	------	1420	0.70 (2)	R	0.17	2-3
			1.82 (2)	R	0.26	
G-4164	------	1510	0.60 (1)	R	0.00	2-3
			1.01 (2)	R	0.06	
			1.28 (2)	R	0.05	
G-4167	------	1660	0.54 (2)	R	0.08	2-4
			0.93 (1)	R	0.00	
G-4171	------	1720	0.31 (10)	F	0.10	3-4
			0.68 (6)	R	0.06	
			1.05 (7)	R	0.11	
G-4172	------	1780	0.22 (3)	S?	0.05	2-4
			0.52 (7)	R?	0.06	
			0.88 (11)	R	0.09	
G-4173	------	1910	0.21 (1)	S?	0.00	2-4
			0.52 (6)	R?	0.08	
			0.87 (2)	R	0.09	

PÅL NIV (Pålitighetsnivå): G = Bra; F = Middels; P = Dårlig; R = Omarbeidet materiale; S = Bitumenimpregnert / rike på liptodetrinitt.
(NB: '+' merking betyr at resultatene kan være påvirket av bitumenimpregnering, mens '?' betyr noe usikkerhet i vurderingen av relativ påvirkning av bitumenimpregnering og/eller omarbeidet materiale).

Tabell 2 Vitrinitt reflektivitets data forts.

IKU NR	LOKASJON	DYBDE (M)	VITRINITT REFLEKTIVITET	PÅL NIV	STANDARD AVVIK	FLUORE-SENS
G-4176	------	1992.00	0.19 (1)	S?	0.00	3-5,7
			0.47 (15)	F	0.11	
			0.83 (8)	R	0.10	
G-4198	------	2057.28	0.32 (32)	S?	0.07	2,4-5
G-4205	------	2094.35	0.40 (40)	F*	0.07	2,4-5
G-4207	------	2105.36	0.43 (21)	G	0.05	3-6
			0.71 (3)	R	0.06	
G-4215	------	2148.86	0.28 (29)	S?	0.06	3-4
			1.37 (1)	R	0.00	
G-4216	------	2153.36	0.28 (27)	S?	0.06	4-5,7
			1.05 (2)	R	0.16	
G-4440	------	2160.79	0.31 (20)	S?	0.03	2-3,6
G-4451	------	2261.30	0.34 (13)	S?	0.13	4-5
			0.76 (3)	R	0.08	
G-4177	------	2295.00	0.40 (11)	F*	0.08	4-5
			0.76 (4)	R	0.05	
			1.08 (3)	R	0.12	
G-4188	------	2399.50	0.31 (13)	S?	0.08	4-5
			0.65 (6)	R	0.04	

PÅL NIV (Pålitighetsnivå): G = Bra; F = Middels; P = Dårlig; R = Omarbeidet materiale; S = Bitumenimpregnert / rike på liptodetrinitt.
(NB: '+' merking betyr at resultatene kan være påvirket av bitumenimpregnering, mens '?' betyr noe usikkerhet i vurderingen av relativ påvirkning av bitumenimpregnering og/eller omarbeidet materiale).

VISUELL KEROGENANALYSE

TABELL NR.: 3
BRØNN NR.: 34/10-34

Prøvenr.	Dybde (m)	Sammensetning av residu	Partikkel størrelse	Bevaring av palynomorfer	Termisk modenhetsindeks *	Bemerkninger
G4176	1992.0	Am: 10% Lm: 30% W: 40% C: 20%	F-M-L	Bra-Dårlig	3 - 4	Forstyrret av svarte mineraler.
G4198	2057.28	W: 10% C: 90%	F-M-L	I.B.M.	I.B.M.?3-4	Kull, noen få sporer og Classopollis.
G4204	2093.39	Am: 10% Al: <5% Lm: 35% W: 50% C: <5%	F-M-L	Bra	(3) - 4	Degradert liptinitt og algemateriale. Lange ved-celler.
G4440	2160.79	Lm: 5% W: 95%	F-M-L	Bra	3 - 4	Degradert ved, lange ved-celler (kull).

FORKORTELSER: (ENG.)

Am = Amorphous
Al = Algae
W = Woody material
C = Coaly fragments
Lm = Liptinitic material
\+ = Present in traces

F = Fine
M = Medium
L = Large

* Ny TAI (1-10 skala, se ekseprimentell del).
I.B.M. = Ingen bestemmelse mulig.

VISUELL KEROGENANALYSE

TABELL NR.: 3
BRØNN NR.: 34/10-34

Prøvenr.	Dybde (m)	Sammensetning av residu	Partikkel størrelse	Bevaring av palynomorfer	Termisk modenhetsindeks *	Bemerkninger
G4452	2267.60	Am: 20% Lm: 35% W: 40% C: 5%	F-M-L	Bra	3 - 4	Svært bleke palyn. Nannoceratopsis max. med andre dinocyster tilstede.
G4178	2300	Am: 5% Al: + Lm: 25% W: 50% C: 20%	F-M-L	Bra	3 - 4	Botryococcus (få). Pollen og sporer.
G4184	2356.0	Am: 30% Lm: 30% W: 10% C: 30%	F-M-L	Bra-dårlig	3 - 4	Svært blek, svarte mineraler forstyrrer, sterk degradering.

FORKORTELSER: (ENG.)

Am = Amorphous
Al = Algae
W = Woody material
C = Coaly fragments
Lm = Liptinitic material
\+ = Present in traces

F = Fine
M = Medium
L = Large

* Ny TAI (1-10 skala, se eksperimentell del).
I.B.M. = Ingen bestemmelse mulig.

Tabell 4 *Data fra Rock-Eval pyrolyse.*

IKUNO	DEPTH (m)	SAMPLE TYPE	S1 (mg/g rock)	S2 (mg/g rock)	TOC (%)	HYDRO. INDEX (mg/g TOC)	PETR. POTEN. S1+S2	PROD. INDEX S1/(S1+S2)	Tmax (°C)
34/10-34									
G4165	1570	CUT	0.00	0.15	0.48	31	0.15	0.00	415
G4166	1630	CUT	0.00	0.08	0.42	19	0.08	0.00	340*
G4170	1690	CUT	0.00	0.09	0.48	19	0.09	0.00	415
G4174	1985.0	SWC	1.67	1.45	1.29	112	3.12	0.54	423
G4175	1990.5	SWC	1.17	0.12	0.54	22	1.29	0.91	376*
G4176	1992.0	SWC	0.17	1.33	3.04	44	1.50	0.11	426
G4189	1995.48	CORE	8.57	3.06			11.63	0.74	412
G4190	1998.67	CORE	19.42	7.00			26.42	0.74	404
G4191	2003.52	CORE	17.14	6.29			23.43	0.73	391*
G4192	2009.30	CORE	4.19	1.04			5.23	0.80	416
G4193	2013.32	CORE	0.48	0.30			0.78	0.62	394*
G4194	2019.27	CORE	0.44	0.58			1.02	0.43	425
G4195	2029.37	CORE	0.18	1.49			1.67	0.11	472*
G4196	2038.50	CORE	0.09	0.51			0.60	0.15	531*
G4197	2048.36	CORE	0.00	0.33			0.33	0.00	520*
G4198	2057.28	CORE	4.73	138.63	52.80	263	143.36	0.03	410
G4199	2057.49	CORE	0.01	1.17			1.18	0.01	535*
G4201	2070.28	CORE	0.38	4.45	5.73	78	4.83	0.08	435
G4202	2080.24	CORE	0.15	0.85			1.00	0.15	433
G4203	2090.11	CORE	0.02	0.53			0.55	0.04	443
G4204	2093.39	CORE	0.21	6.86	4.00	172	7.07	0.03	431
G4205	2094.35	CORE	6.00	99.39	58.20	171	105.39	0.06	434
G4206	2099.78	CORE	1.77	37.83	21.20	178	39.60	0.04	429
G4207	2105.36	CORE	3.17	77.57	27.50	282	80.74	0.04	431
G4208	2107.93	CORE	0.02	0.10			0.12	0.17	487
G4209	2116.77	CORE	0.00	0.49			0.49	0.00	499*
G4210	2119.00	CORE	1.09	34.66	16.50	210	35.75	0.03	436
G4211	2127.46	CORE	0.47	4.18			4.65	0.10	438
G4212	2136.31	CORE	0.60	1.22			1.82	0.33	448
G4213	2141.46	CORE	0.04	1.14	1.31	87	1.18	0.03	437
G4214	2146.85	CORE	0.08	0.12			0.20	0.40	431
G4439	2157.26	CORE	0.07	0.17			0.24	0.29	434*
G4440	2160.79	CORE	5.32	107.06	36.70	292	112.38	0.05	421
G4441	2168.93	CORE	0.23	0.25			0.48	0.48	408
G4442	2177.30	CORE	0.16	1.74			1.90	0.08	432
G4443	2186.27	CORE	0.22	1.34			1.56	0.14	537*
G4444	2195.16	CORE	0.78	1.06			1.84	0.42	493*
G4445	2205.19	CORE	0.04	0.22			0.26	0.15	466*
G4446	2214.58	CORE	6.98	6.70			13.68	0.51	357*
G4447	2224.33	CORE	0.76	2.06			2.82	0.27	533*
G4448	2234.33	CORE	0.20	2.79			2.99	0.07	533*
G4449	2245.10	CORE	0.07	0.27			0.34	0.21	432
G4450	2254.04	CORE	0.10	0.57			0.67	0.15	438
G4451	2261.30	CORE	0.39	2.12	1.65	128	2.51	0.16	437
G4452	2267.60	CORE	0.18	2.22	1.55	143	2.40	0.08	433
G4453	2272.49	CORE	0.11	1.87	2.36	79	1.98	0.06	436
G4177	2295.0	SWC	0.03	1.09	1.37	80	1.12	0.03	435

* - Upålitlig pga. lav S2-verdi og/eller splitting av S2-toppen

Tabell 4 *Data fra Rock-Eval pyrolyse.*

IKUNO	DEPTH (m)	SAMPLE TYPE	S1 (mg/g rock)	S2 (mg/g rock)	TOC (%)	HYDRO. INDEX (mg/g TOC)	PETR. POTEN. S1+S2	PROD. INDEX S1/(S1+S2)	Tmax (°C)
34/10-34									
G4178	2300	CUT	0.14	2.03	2.09	97	2.17	0.06	433
G4179	2312.5	SWC	0.05	0.79	1.50	53	0.84	0.06	425
G4180	2325.0	SWC	0.04	0.78	1.44	54	0.82	0.05	428
G4181	2332.5	SWC	0.06	0.82	1.55	53	0.88	0.07	428
G4182	2348	CUT	0.06	1.37	1.56	88	1.43	0.04	434
G4183	2350.0	SWC	0.04	0.86	1.24	69	0.90	0.04	431
G4184	2356.0	SWC	0.05	1.06	1.35	79	1.11	0.05	430
G4185	2360	CUT	0.07	1.33			1.40	0.05	433
G4186	2360.0	SWC	0.14	0.25			0.39	0.36	425
G4187	2363.0	SWC	0.02	0.27			0.29	0.07	428

Tabell 5 Data fra pyrolyse-GC (S_2). Prosent av totalt areal.

IKU nr.	Dybde (m)	Litologi	C_1	C_2-C_5	C_6-C_{14}	C_{15+}
G4176	1992.0	Leirstein	5	25	53	16
G4198	2057.28	Kull	9	15	39	38
G4204	2093.39	Leirstein	6	18	39	37
G4440	2160.79	Kull	8	13	30	50
G4452	2267.60	Leirstein	5	21	51	23
G4178	2300	Siltstein	7	29	52	12
G4184	2356.0	Leirstein	6	32	53	9

Tabell 6 Gass-sammensetning (normaliserte volumprosenter).

	IFE no.	C_1 %	C_2 %	C_3 %	iC_4 %	nC_4 %	iC_5 %	nC_5 %	CO_2 %	ΣC_1-C_5	Gass fukt.	iC_4/ nC_4
DST	9918	78.4	9.9	6.9	0.95	2.1	0.47	0.48	0.9	99.1	0.21	0.47

Tabell 7 Karbon- og hydrogen-isotop data fra gass.

	IFE no.	C_1 $\delta^{13}C$ o/ooPDB	C_1 δDo/oo SMOW	C_2 $\delta^{13}C$ o/ooPDB	C_3 $\delta^{13}C$ o/ooPDB	iC_4 $\delta^{13}C$ o/ooPDB	nC_4 $\delta^{13}C$ o/ooPDB	CO_2 $\delta^{13}C$ o/ooPDB	CO_2 $\delta^{18}O$ o/ooPDB
DST	9918	-49.0	-220	-31.0	-29.3	-27.6	-28.8	-4.5	-6.9

Tabell 8 *Kokepunktsfraksjoner av oljen.*

IKUNR.	Total olje (mg)	Olje >210°C (mg)	Lavmolekylære komponenter (<210°C) (mg)	(%)
34/10-34 G4075 DST 1	100.0	77.0	22.9	22.9

Tabell 9 *Tetthet av oljen.*

IKU nr.	Hel olje Tetthet	Hel olje API gravitet
G4075 DST 1	0.8639	32.29

Tabell 10 *Sammensetning av C_2-C_8 fra olje (G4075, DST 1).*

Retensjonstid (min.)	µl/ml olje	Topp navn
1.179	0.436	n-C_2
1.523	4.022	n-C_3
2.515	2.591	i-C_4
3.619	8.020	n-C_4
7.120	6.538	i-C_5
8.667	8.461	n-C_5
12.720	4.855	2MC5
13.491	3.369	3MC5
14.587	8.946	n-C_6
15.805	5.360	$MCyC_5$
17.411	5.826	Benzene
18.075	5.412	2MC6
18.472	4.161	3MC6
	6.443	$DMCYC_5$ (SUM C1-C3)
18.661	1.697	- C1
18.792	1.580	- C2
18.936	3.167	- C3
19.747	9.775	N-C_7
20.483	12.131	$MCYC_6$
22.000		int. std.
22.725	5.779	Toluene
22.997	4.141	2+4MC7
	7.780	$DMCyC_6$ (C_1+C_2)
23.275	2.835	- C1
23.352	4.945	- C2
24.680	9.243	N-C_8
25.944	5.452	$EtCyC_6$
27.669	6.634	m+p-xylene
28.037	2.306	2MC8
28.531	2.919	4MC8
28.715	2.120	o-xylene
29.355	9.478	n-C_9

Totalt innhold av C_2-C_9 fraksjonen: 152.20 µl/ml total olje.

Tabell 11 *Vekt av kromatografiske fraksjoner.*

IKUNO	DEPTH (m)	SAMPLE TYPE	ROCK EXTR. (g)	EOM (mg)	ASPH (mg)	SAT HC (mg)	ARO HC (mg)	POLAR COMP. (mg)	HC (mg)	NONHC # (mg)	TOC (%)
34/10-34											
G4176	1992.0	SWC	17.4	27.2	11.9	2.6	6.2	7.7	8.8	18.4	3.04
G4190	1998.67	CORE	14.5	479.5	19.8	205.4	147.2	57.9	352.6	126.9	
G4194	2019.27	CORE	34.6	104.1	13.4	29.0	29.5	18.8	58.5	45.6	
G4198	2057.28	CORE	2.3	153.1	102.2	1.6	24.6	15.1	26.2	126.9	52.80
G4204	2093.39	CORE	19.6	48.6	29.4	0.7	7.1	11.4	7.8	40.8	4.00
G4440	2160.79	CORE	4.7	231.5	147.4	6.5	37.1	27.5	43.6	187.9	36.70
G4441	2168.93	CORE	39.0	43.0	11.5	8.7	10.6	8.0	19.3	23.7	
G4446	2214.58	CORE	39.7	151.0	148.0	0.2	0.6	5.8	0.8	150.2	
G4452	2267.60	CORE	28.9	24.7	13.0	0.4	2.9	7.6	3.3	21.4	1.55
G4178	2300	CUT	7.5	11.5	6.1	5.2	4.0	3.9	9.2	2.3	2.09
G4184	2356.0	SWC	5.5	6.1	4.1	1.1	1.6	1.2	2.7	3.4	1.35
G4186	2360.0	SWC	3.0	7.3	1.8	1.0	1.1	2.5	2.1	5.2	
G4075		OIL		100.0	1.5	45.9	34.9	7.5	80.8	19.2	

- NONHC er beregnet som differansen: NONHC = EOM - HC

Tabell 12 *Konsentrasjon av EOM og kromatografiske fraksjoner.*

(ppm av hel bergart)

IKUNO	DEPTH (m)	SAMPLE TYPE	EOM	ASPH	SAT HC	ARO HC	POLAR COMP.	HC	NONHC #
34/10-34									
G4176	1992.0	SWC	1559	682	151	355	439	506	1053
G4190	1998.67	CORE	33075	1366	14168	10152	3997	24320	8755
G4194	2019.27	CORE	3006	387	839	852	542	1691	1315
G4198	2057.28	CORE	65714	43867	684	10576	6467	11260	54454
G4204	2093.39	CORE	2478	1499	35	360	579	395	2083
G4440	2160.79	CORE	49105	31266	1380	7863	5833	9243	39862
G4441	2168.93	CORE	1101	295	222	273	205	495	606
G4446	2214.58	CORE	3808	3732	5	15	146	20	3788
G4452	2267.60	CORE	855	450	13	102	265	115	740
G4178	2300	CUT	1528	810	689	529	513	1218	310
G4184	2356.0	SWC	1117	751	200	289	220	489	628
G4186	2360.0	SWC	2468	609	354	358	855	712	1756
G4075		OIL							

- NONHC er beregnet som differansen: NONHC = EOM - HC

Tabell 13 *Konsentrasjon av EOM og kromatografiske fraksjoner.*

(mg/g TOC)

IKUNO	DEPTH (m)	SAMPLE TYPE	EOM	ASPH	SAT HC	ARO HC	POLAR COMP.	HC	NONHC #
34/10-34									
G4176	1992.0	SWC	51.3	22.4	5.0	11.7	14.4	16.7	34.6
G4190	1998.67	CORE	-1	-1	-1	-1	-1	-1	-1
G4194	2019.27	CORE	-1	-1	-1	-1	-1	-1	-1
G4198	2057.28	CORE	124.5	83.1	1.3	20.0	12.2	21.3	103.2
G4204	2093.39	CORE	61.9	37.5	0.9	9.0	14.5	9.9	52.0
G4440	2160.79	CORE	133.8	85.2	3.8	21.4	15.9	25.2	108.6
G4441	2168.93	CORE	-1	-1	-1	-1	-1	-1	-1
G4446	2214.58	CORE	-1	-1	-1	-1	-1	-1	-1
G4452	2267.60	CORE	55.2	29.0	0.8	6.6	17.1	7.4	47.8
G4178	2300	CUT	73.1	38.8	33.0	25.3	24.5	58.3	14.8
G4184	2356.0	SWC	82.8	55.6	14.9	21.4	16.3	36.3	46.5
G4186	2360.0	SWC	-1	-1	-1	-1	-1	-1	-1
G4075		OIL	-1	-1	-1	-1	-1	-1	-1

- NONHC er beregnet som differansen: NONHC = EOM - HC
-1 - Ingen tilgjengelige data

Tabell 14 *Sammensetning av EOM og olje.*

IKUNO	DEPTH (m)	SAMPLE TYPE	ASPH EOM (%)	SAT EOM (%)	ARO EOM (%)	HC EOM (%)	POLAR EOM (%)	SAT / ARO x 100	HC / NONHC x 100
34/10-34									
G4176	1992.0	SWC	43.8	9.7	22.8	32.5	28.1	42.5	48.1
G4190	1998.67	CORE	4.1	42.8	30.7	73.5	12.1	139.6	277.8
G4194	2019.27	CORE	12.9	27.9	28.3	56.2	18.0	98.4	128.5
G4198	2057.28	CORE	66.8	1.0	16.1	17.1	9.8	6.5	20.7
G4204	2093.39	CORE	60.5	1.4	14.5	15.9	23.4	9.7	18.9
G4440	2160.79	CORE	63.7	2.8	16.0	18.8	11.9	17.5	23.2
G4441	2168.93	CORE	26.7	20.2	24.8	45.0	18.6	81.5	81.7
G4446 *	2214.58	CORE	98.0	0.1	0.4	0.5	3.8	31.3	0.5
G4452	2267.60	CORE	52.6	1.5	11.9	13.4	30.9	12.8	15.5
G4178 **	2300	CUT	53.0	45.1	34.6	79.7	33.5	130.3	392.0
G4184 **	2356.0	SWC	67.2	17.9	25.8	43.7	19.7	69.5	77.8
G4186 **	2360.0	SWC	24.7	14.4	14.5	28.9	34.7	98.9	40.6
G4075		OIL	1.5	45.9	34.9	80.8	7.5	131.4	420.0

\# - NONHC er beregnet som differansen: NONHC = EOM - HC
* - Upålitlig SAT/ARO-forhold pga. lav maltenvekt
** - Upålitlige forhold pga. lav EOM-vekt

Tabell 15 *Forhold beregnet fra gasskromatogrammer av mettede hydrokarboner.*

IKUNO	FRAC NAME	DEPTH	Pri / Phy	Pri A=/ n-C17	Phy B=/ n-C18	A / B	n-C17 / n-C27	n-C31 / n-C19	CPI 1	CPI 2
34/10-34										
G4176		1992.00	2.5	1.9	0.8	2.4	1.3	0.3	1.8	1.9
G4190		1998.67	1.4	1.0	0.9	1.1	4.0	0.2	1.0	1.0
G4194		2019.27	1.3	1.1	1.0	1.1	1.7	0.7	1.1	1.0
G4198		2057.28	4.0	4.7	1.6	2.9	2.6	-1	-1	-1
G4204		2093.39	5.7	2.6	0.5	5.2	0.2	2.7	2.3	2.3
G4440		2160.79	2.6	4.1	1.0	3.9	0.3	1.0	1.9	1.7
G4441		2168.93	1.3	1.0	0.8	1.2	3.3	0.2	1.0	1.0
G4446		2214.58	1.2	0.9	0.7	1.4	3.1	0.2	1.2	1.1
G4452		2267.60	1.9	1.3	1.1	1.2	0.6	0.9	2.3	2.6
G4178		2300.00	1.4	1.0	0.8	1.2	3.7	0.3	1.1	1.2
G4184		2356.00	1.6	1.1	0.8	1.3	2.0	0.6	1.4	1.4
G4186		2360.00	0.8	0.9*	0.7	1.3*	2.8*	0.1	1.1	1.0
G4075		Oil	1.4	1.0	0.8	1.2	3.7	0.2	1.0	1.0

-1 = Ingen tilgjengelige data
* = upålitelige forhold pga. avdamping i det lavmolekylære området.

$$CPI1 = \frac{1}{2} * \left(\frac{C25+C27+C29+C31}{C24+C26+C28+C30} + \frac{C25+C27+C29+C31}{C26+C28+C30+C32} \right)$$

$$CPI2 = 2 * C27 / (C26+C28)$$

Forhold som inneholder pristan og fytan er beregnet fra toppareal. Alle andre forhold er beregnet fra topphøyder.

Tabell 16 *Forhold beregnet fra gasskromatogrammer av aromatiske hydrokarboner.*

IKU nr.	Dybde (m)	Litologi	MPI-1[1)]	MPI-2[2)]
G2176	1992.0	Leirstein	0.64	0.68
G4190	1998.67	Sandstein	0.48	0.47
G4194	2019.27	Sandstein	0.65	0.70
G4198	2057.28	Kull	0.49	0.47
G4204	2093.39	Leirstein	0.55	0.60
G4440	2160.79	Kull	(0.52)	(0.50)
G4441	2168.93	Sandstein	(0.50)	(0.56)
G4446	2214.58	Sandstein	(0.71)	(0.80)
G4452	2267.60	Leirstein	0.47	0.52
G4178	2300	Siltstein	0.48	0.51
G4184	2356.0	Leirstein	0.42	0.50
G4186	2360	Sandstein	0.62	0.73
G4075		Olje	(0.48)	(0.52)

1) $MPI\text{-}1 = \frac{1.5\ (2MP+3MP)}{P+1MP+9MP}$

2) $MPI\text{-}2 = \frac{3\ (2MP)}{P+1MP+9MP}$

Verdiene i parentes er mindre pålitelige pga. lave fenantren og metylfenantren-intensiteter.

Tabell 17 *Molekylære forhold beregnet fra terpan- og steran-masse fragmentogrammer. Modenhets- og kilde-avhengige forhold.*

IKU no.	Dybde	Litologi	Q/E[1] terp.	Tm/Ts[2] terp.	X/E[3] terp.	Z/E[4] terp.	a/(a+j)[5] ster.
G4176	1992.0	Leirst.	0.02	2.39	0.06	0.00	0.52
G4190	1998.67	Sandst.	0.05	0.86	0.05	0.20	0.63
G4194	2019.27	Sandst.	0.06	0.81	0.06	0.23	0.61
G4198	2057.28	Kull	0.00	-1	0.12	1.35	1.00
G4204	2093.39	Leirst.	0.01	2.16	0.11	0.14	0.55
G4440	2160.79	Kull	0.00	-1	0.16	0.20	1.00
G4441	2168.93	Sandst.	0.05	0.91	0.06	0.22	0.63
G4446	2214.58	Sandst.	0.08	1.20	0.06	0.22	0.71
G4452	2267.60	Leirst.	0.02	2.67	0.05	0.12	0.40
G4178	2300	Siltst.	0.06	1.20	0.06	0.16	0.60
G4184	2356.0	Leirst.	0.06	1.38	0.06	0.28	0.49
G4186	2360.0	Sandst.	0.30	1.02	0.06	0.20	0.61
G4075		Olje	0.05	1.00	0.06	0.22	0.60

1) Q/E i m/z 191.

2) B/A i m/z 191.

3) X/E i m/z 191.

4) Z/E i m/z 191.

5) a/(a+j) i m/z 217.

-1 Forholdet kan ikke beregnes pga. lav intensitet.

Tabell 18 *Molekylære forhold beregnet fra terpan- og steran-massefragmentogrammer. Modenhetsavhengige forhold.*

IKUnr.	Dybde (m)	Litologi	αβ/αβ+βα[1] hop.	%22S[2] hop.	%22S[3] hop.	%22S[4] hop.	%20S[5] ster.	%ββ[6] ster.
G4176	1992.0	Leirst.	0.80	22	36	41	23	54
G4190	1998.67	Sandst.	0.95	58	59	60	46	57
G4194	2019.27	Sandst.	0.92	58	58	60	44	57
G4198	2057.28	Kull	0.84	21	9	10	29	57
G4204	2093.39	Leirst.	0.76	17	12	14	15	46
G4440	2160.79	Kull	0.79	19	21	13	25	42
G4441	2168.93	Sandst.	0.93	57	59	60	40	58
G4446	2214.58	Sandst.	0.90	51	56	57	34	65
G4452	2267.60	Leirst.	0.80	18	19	18	13	35
G4178	2300	Siltst.	0.91	51	55	57	39	56
G4184	2356.0	Leirst.	0.86	41	51	55	30	51
G4186	2360.0	Sandst.	0.92	53	61	60	43	55
G4075		Olje	0.93	56	58	58	44	59

1) E/(E+F) i m/z 191.

2) 100 * G/(G+H) i m/z 191.

3) 100 * J1/(J1+J2) i m/z 191.

4) 100 * gjennomsnitt av G/(G+H), J1/(J1+J2), ...M1/(M1+M2) i m/z 191.

5) 100 * q/(q+t) i m/z 217.

6) 100 * (r+s)/(q+t+r+s) i m/z 217.

Tabell 19 *Molekylær fordeling av C_{27}, C_{28} og C_{29} ααα regulære steraner.*

IKU nr.	Dybde (m)	Litologi	fra m/z 217[1] C_{27} (%)	C_{28} (%)	C_{29} (%)	fra m/z 218[2] C_{27} (%)	C_{28} (%)	C_{29} (%)
G4176	1992.0	Leirst.	25.4	21.9	52.7	25.9	22.5	51.6
G4190	1998.67	Sandst.	37.2	20.0	42.7	34.0	27.9	38.1
G4194	2019.27	Sandst.	35.6	24.1	40.3	33.5	29.8	36.7
G4198	2057.28	Kull	0.0	13.9	86.1	13.4	14.5	72.1
G4204	2093.39	Leirst.	7.8	16.7	75.5	14.0	18.0	68.0
G4440	2160.79	Kull	0.0	11.8	88.2	19.2	19.3	61.5
G4441	2168.93	Sandst.	32.9	21.7	45.4	32.4	27.1	40.5
G4446	2214.58	Sandst.	36.8	14.0	49.2	35.9	21.6	42.5
G4452	2267.60	Leirst.	52.4	15.5	32.1	40.6	22.7	36.7
G4178	2300	Siltst.	34.9	19.9	45.2	32.1	26.8	41.1
G4184	2356.0	Leirst.	39.3	17.8	42.9	35.0	26.6	38.4
G4186	2360.0	Sandst.	39.1	19.7	41.2	36.7	25.7	37.6
G4075		Olje	35.5	21.6	42.9	32.8	28.4	38.8

[1] Fordeling av toppene j, p, t i m/z 217.

[2] Fordeling av toppene h+i, n+o, r+s i m/z 218.

Tabell 20 *Karbon-isotop data for EOM, olje og fraksjoner.*

IKU nr.	Dybde (m)	EOM/olje δ^{13}Co/ooPDB	SAT δ^{13}Co/ooPDB	ARO δ^{13}Co/ooPDB	NSO δ^{13}Co/ooPDB	ASF δ^{13}Co/ooPDB	Kerogen δ^{13}Co/ooPDB
G4176	1992.0	-25.8	-28.9	-27.0	-26.5	-24.7	-23.3
G4190	1998.67	-29.2	-29.9	-29.0	-29.1	-28.4	
G4194	2019.27	-29.8	-30.7	-28.8	-28.6	-26.5	
G4198	2057.28	-24.6	-27.3	-26.0	-25.7	-24.0	-22.7
G4204	2093.39	nd	nd	-25.5	-26.6	-24.8	-23.6
G4440	2160.79	-26.0	-28.5	-26.3	-26.6	-25.5	-25.4
G4441	2168.93	-28.3	-29.8	-28.2	-28.0	-25.6	
G4446	2214.58	-28.5	nd	nd	-28.2	-28.5	
G4452	2267.60	26.2	-28.8	-26.3	(27.1)	-25.9	-24.7
G4178	2300	-26.7	-29.3	-28.3	-28.1	-25.9	-24.5
G4184	2356.0	nd	-29.6	-28.6	-28.4	-26.3	-25.8
G4184(2)	2356.0					-27.5	
G4186	2360	-28.9	-29.1	-28.7	(-29.7)	-28.0	
G4075	olje	-29.2	-29.7	-29.0	-28.5	-29.2	